

REMARKS

In the Office Action of April 10, claims 1-7 were rejected under 35 U.S.C. 103 (a) as being obvious over Andersen ('664) in view of Kobayashi ('998), Zebelean and Peterson.

In response, claims 1-3 have been amended and Applicant would hereby submit remarks concerning the Examiner's comments, comparing the present invention with the references cited by the Examiner.

The subject matter of the present invention, as recited in the amended claims, is "a golf club comprising a head formed by combining a plurality of metal shells and a shaft attached to the head, each of said metal shells having an inner surface, wherein at least a part of the inner surface of at least one of said metal shells is formed to a certain thickness by a blasting process," as recited in claim 1. Also, the subject matter of the invention is "a golf club according to claim 1, wherein at least a partial portion of the inner surface of at least one of said metal shells is formed to a different thickness than that of the remainder thereof by subjecting at least a part of a certain surface thereof to the blasting process," as recited in claim 2.

It is respectfully called to attention that the structure as recited in the amended claims 1-3 gives blasting a new technical concept of adjustment of the thickness of separate shells, because said blasting has heretofore been only known as one of processing methods for forming stamps, fine irregularities or cleaning for improvement of external attractiveness. As the thickness of a shell to be ground per an hour is relatively small in a blasting process as compared with a conventional grinding process, it is possible to perform the grinding process while fine adjusting the grinding quantity, so that extremely precise adjustment of the thickness is possible as compared with the conventional process.

As a result, the position of the center of gravity of a golf club head becomes easier to adjust, thus enabling the enhancement of degree of freedom in designing a golf club head. Further, as the inner surfaces of the separate shells are subjected to the blasting process, it is possible to perform the grinding process without impairing the appearance of the head.

The amendments to the claims 1-3 are supported by the descriptions in the original specification, for example in lines 14-16, page 5: "The surfaces thus ground are the inside and/or outside surfaces of the respective shells 11,12,13 and 14." The surface to be ground is limited to "the inner surfaces" based on this description, to make the invention distinct from the conventional blasting which is to improve external appearance.

Concerning, the cited references. Anderson includes at least two shells which are joined together to form a golf club, disclosing a grinding process for removing the thickness "t" from the metal shells. Kobayashi, Motomiya, Zebelean each teach a technique for assembling a plurality of shells which are sequentially welded or joined together to form a hollow metallic club head.

For example, Kobayashi discloses a crown shell member, a face shell member and a side-peripheral shell member, as illustrated in Fig. 4. Zebelean teaches that a hollow club head comprises two or more members which are cast and fixed together, pointing out that casting more than two components would increase the cost, as described in lines 29-37, column 5. Motomiya discloses that a club head is made up of two or three shell members formed by forging or casting technique, as shown in Figs. 2 and 3.

Also, Kobayashi, Zebelean and Motomiya each disclose a component for connecting a hollow shell with a shaft.

Peterson teaches that sandblasting and grinding are normally used for improving the external appearance of a club head.

Detailed Comparison of the Present Invention with the Cited References:

a) Claim 1

Applicant admits that Anderson and the claim 1 of the present application have a common feature in that Anderson's head comprises a head composed of a plurality of metallic shells combined together and a shaft attached thereto, in which at least a part of the separate shells is ground to be formed to a preset thickness.

However, Anderson is totally silent with the blasting of the inner surfaces of the separate shells.

On the other hand, Kobayashi, Zebelean and Motomiya disclose a structure in common with the claim 1 of the present application in that a plurality of separate metallic shells are combined to form a golf club head with which is a shaft is connected. However, these cited references also are totally silent with the blasting of the inner surfaces of the separate shells.

It is also true of Peterson, as Peterson only discloses the use of sandblasting for improvement of external appearance, and neither teaches nor suggests the blasting of the inner surfaces of the separate shells to adjust the thickness of the separate shells.

According to the above conventional art, it is difficult to perform grinding process while fine tuning the grinding quantity, and thus the precise adjustment of the thickness becomes difficult. As a result, not only the adjustment of the center of gravity of a head but also a degree of freedom in designing a golf club is subjected to substantial restraints.

According to the present invention in which the inner surfaces of the separate shells are subjected to blasting, the thickness of a shell to be ground per an hour is relatively small as compared with conventional grinding process, so that it is possible to perform grinding process while fine adjusting the grinding quantity, whereby extremely precise adjustment of the thickness is possible as compared with conventional process. As a result, the position of the center of gravity of a golf club head becomes easier to adjust, thus enabling the enhancement of degree of freedom in designing a golf club head. Further, as the inner surface(s) of the separate shells is/are subjected to blasting process, it is possible to perform grinding process without impairing the appearance of the head.

As discussed above, according to the amended claim 1 of the present application, at least a part of the inner surfaces of the separate shells is formed to a preset thickness by a blasting process, whereby the structure is advantageous in that the shells can be processed while fine tuning the grinding quantity, thus enabling the extremely precise adjustment of shell thickness as compared with conventional grinding art.

Applicant strongly believes that these actions and effects unique to the invention are neither taught nor suggested by the cited references which are totally silent with the use of blasting for forming at least a part of the inner surfaces of the separate shells.

b) Claim 2

Applicant notes that any of the cited references is silent with the structure as recited in the amended claim 2: “at least a partial portion of the inner surface of at least one of the metal shells is formed to a different thickness than that of the remainder thereof by subjecting at least a part of a certain surface thereof to the blasting process.”

According to the conventional art, it is difficult to perform a grinding process while fine tuning the grinding quantity, and thus the precise adjustment of the thickness becomes difficult. As a result, not only the adjustment of the center of gravity of a head but also a degree of freedom in designing a golf club is subjected to substantial restraints.

According to the present invention in which “at least a partial portion of the inner surface of the metal shell is formed to a different thickness than that of the remainder thereof

by the blasting process, it is possible to perform the grinding process while fine adjusting the grinding quantity, whereby extremely precise adjustment of the thickness is possible as compared with conventional process.

Applicant strongly believes that these actions and effects unique to the invention are neither taught nor suggested by the cited references which are totally silent with the use of blasting for forming at least a part of the inner surface of the separate shell to a different thickness.

c) Claim 3

Claim 3 is directed to a method for manufacturing a golf club of which the structure is as defined in the claim 1. The remarks concerning claim 1 also apply to the claim 3.

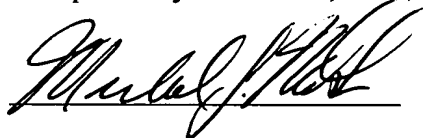
As the remaining claims 4-7 depend from the above-discussed claims 1-3, it is believed that they are also allowable, as being depending from one of the amended claims 1-3.

Accompanying this amendment is an Information Disclosure Statement with information received in a corresponding foreign application.

Conclusion

In view of the Amendment and Remarks, reconsideration of the application is respectfully requested. After the Amendment, claims 1-7 are now pending, and a Notice of Allowance for these claims is earnestly solicited.

Respectfully submitted,

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